



August 20, 2013

FILED ELECTRONICALLY

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street S.W.
Washington, D.C. 20554

Re: Notice of Written *Ex Parte* Presentation – GN 12-354
Amendment of the Commission's Rules with Regard to Commercial
Operations in the 3550-3650 MHz Band

Dear Ms. Dortch:

The Satellite Industry Association (“SIA”)¹ hereby submits the attached written *ex parte* presentation in GN Docket No. 12-354.² SIA filed comments and reply comments in this proceeding expressing its concerns regarding the potential for interference from proposed small cell deployments in the 3550-3650 MHz band

¹ SIA is a U.S.-based trade association providing worldwide representation of the leading satellite operators, service providers, manufacturers, launch services providers, and ground equipment suppliers. Since its creation more than eighteen years ago, SIA has advocated for the unified voice of the U.S. satellite industry on policy, regulatory, and legislative issues affecting the satellite business. For more information, visit www.sia.org. SIA Executive Members include: Artel, LLC; The Boeing Company; The DIRECTV Group; EchoStar Satellite Services LLC; Harris CapRock Communications; Hughes Network Systems, LLC; Intelsat S.A.; Iridium Communications Inc.; Kratos Defense & Security Solutions; LightSquared; Lockheed Martin Corporation.; Northrop Grumman Corporation; Rockwell Collins Government Systems; SES Americom, Inc.; and SSL. SIA Associate Members include: AIS Engineering, Inc.; Astrium Services Government, Inc.; ATK Inc.; Cisco; Cobham SATCOM Land Systems; Comtech EF Data Corp.; DRS Technologies, Inc.; Encompass Government Solutions; Eutelsat, Inc.; Globecom Systems, Inc.; Inmarsat, Inc.; ITT Exelis; Marshall Communications Corporation.; MTN Government Services; NewSat America, Inc.; O3b Networks; Orbital Sciences Corporation; Panasonic Avionics Corporation; Spacecom, Ltd.; Row 44; Spacenet Inc.; TeleCommunication Systems, Inc.; Telesat Canada; The SI Organization, Inc.; TrustComm, Inc.; Ultisat, Inc.; ViaSat, Inc., and XTAR, LLC.

² Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, Notice of Proposed Rulemaking, *available at* <http://apps.fcc.gov/ecfs/document/view?id=7022080889> (“NPRM”).

("3.5 GHz Band") into geostationary fixed-satellite services ("FSS") in the 3600-3700 MHz and 3700-4200 MHz frequency bands (together, the "C-band"). One important issue raised in the NPRM and addressed in the SIA pleadings is the need to exclude small cells from the area surrounding FSS earth stations in order to prevent harmful interference.³ Pending further study and receipt of more information regarding small cell technical characteristics, SIA argued that the 150-kilometer exclusion zone suggested in the NPRM was a reasonable baseline. SIA here provides a technical analysis that evaluates the feasibility of sharing between small cells and FSS networks. The study confirms that substantial exclusion zones – in some cases much greater in size than 150 kilometers -- will be required to protect FSS operations.

Specifically, the study shows that the risk of in-band interference from even a single small cell base station into an FSS earth station is significant, requiring separation distances of dozens or hundreds of kilometers to ensure protection of FSS receivers from disruption from co-frequency and adjacent band small cell operations. Even if small cell systems are fitted with filters to reject out-of-band emissions, small cell systems may cause overdrive of the amplifiers present at every satellite receive station, which would produce a distorted signal by driving them into non-linear operation absent sufficient separation distances.

These results were derived from a detailed analysis of three operational scenarios: in-band interference, out-of-band interference, and overdrive of Low Noise Amplifier ("LNA") or Low Noise Block ("LNB") signal amplifiers. For the in-band interference cases, SIA determined that a distance separation of up to 107.4 kilometers is required in order to mitigate long-term interference, and that a distance separation of up to 487.0 kilometers is required in order to mitigate short-term interference. For the out-of-band interference cases, a distance separation of up to 36.4 kilometers must be maintained between a transmitting cell station and an FSS receiving earth station in order to ensure that interference does not exceed the interference threshold. Finally, a distance separation of up to 8.91 kilometers must be maintained between a transmitting cell station and an FSS receiving earth station in order to mitigate LNA/LNB overdrive interference. In all cases, only a single emitting small cell base station was considered – the aggregate interference that would be caused by multiple operational small cell sites around a single FSS earth station could be far worse.

As SIA has previously observed, simply determining the size of the required exclusion zone or separation distance is insufficient to ensure FSS

³ See Comments of the Satellite Industry Association, GN Docket No. 12-354 ("SIA Comments") at 13-17; Reply Comments of the Satellite Industry Association, GN Docket No. 12-354 ("SIA Reply Comments") at 14-20.

networks will be protected. The Commission also must develop and implement methods to effectively enforce compliance with the necessary separation distances, and the record to date casts significant questions on whether such methods exist and can be feasibly deployed.⁴

Given these ongoing concerns, SIA again emphasizes that the Commission cannot approve small cells for use in additional spectrum unless it is clear their operation will not impair current or future C-band satellite services. SIA urges the Commission to continue its thorough investigation of the necessity and practicality of allowing the expansion of small cells into the 3.5 GHz band. If the Commission decides to proceed, it must ensure that all C-band satellite services are fully protected from harmful interference.

A copy of this letter and attached *ex parte* written presentation are being e-mailed to the Federal Communications Commission staff identified below.

Please contact Patricia Cooper or Sam Black if you have any questions.

Respectfully submitted,

/s/

SATELLITE INDUSTRY ASSOCIATION

A handwritten signature in black ink, appearing to read "Patricia Cooper". The signature is fluid and cursive, with the first name "Patricia" being more prominent than the last name "Cooper".

Patricia Cooper, President
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Attachment

cc (via email):

Louis Peraertz
David Goldman
Courtney Reinhard

⁴ See SIA Comments at 15-17; SIA Reply Comments at 17-20.

Mindel De La Torre

Robert Nelson

Ruth Milkman

Julius Knapp